UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF COMMERCIAL FISHERIES

CALIFORNIA FISHERY MARKET NEWS MONTHLY SUMMARY

April 1964

Part II–Fishing Information*

Sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists

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Bureau of Commercial Fisheries
Biological Laboratory
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* Part I - "Fishery Products Production and Market Data" is issued by the Bureau of Commercial Fisheries, Market News Service, Post Office Building, San Pedro, California

EARLY SEASON ALBACORE SURVEYS AND RADIO BROADCASTS TO ALBACORE FLEET

R/V N.B. Scofield of the California Department of Fish and Game and R/V Black Douglas of the U.S. Bureau of Commercial Fisheries will depart late May for early season albacore surveys. The area to be covered will depend on oceanographic conditions at time of departure but will generally cover the region from Guadalupe Island to Monterey Bay offshore to about 800 miles. N.B. Scofield will depart San Pedro May 25 and will return June 23. Black Douglas will depart San Diego May 27 and will return July 6.

Broadcasts to the albacore fleet from May 25 to July 6 and communication checks between the two research vessels will be as follows:

Time (PST)	Frequency
0915 - 1915	4415.8 kc
0920 - 1920	8805.6 kc
0930 - 1930	2638 kc
0935 - 1935	2738 kc

In addition to broadcasts from research vessels, radio station WWD licensed to the Bureau of Commercial Fisheries and located on the campus of Scripps Institution of Oceanography will broadcast twice daily from June 15 - September 15 on frequency 4415.8 at 1000 PST and 1945 PST. Broadcasts will include latest albacore information obtained from research vessels, Navy picket vessels, sea temperatures at selected points, and other information believed pertinent to albacore fishermen. Masters of commercial fishing vessels wishing to use frequency 4415.8 kc should contact this laboratory for further information.

SEA SURFACE TEMPERATURE CHARTS, EASTERN PACIFIC OCEAN

APRIL 1964

Acknowledgments

The following organizations and stations contributed data for the April 1964 charts:

U.S. Bureau of Commercial Fisheries Exploratory Fishing and Gear Research Base, Seattle, Washington
U.S. Bureau of Commercial Fisheries Biological Laboratories, La Jolla, California; Honolulu, Hawaii and Seattle, Washington
U.S. Weather Bureau, San Diego, California
U.S. Naval Communication Station Balboa, Fort Amador, Canal Zone
U.S. Weather Bureau Port Meteorological Office, Cristobal, Canal Zone
California Department of Fish and Game R/V N.B. Scofield
Guadalupe Island, Coronado Island, Ensenada, Cedros Island and Almejas Bay by Pedro Mercado of the Universidad Autonoma de Baja California, Ensenada, Mexico
Hopkins Marine Station, Pacific Grove, California by J. P. Balesteri
Inter-American Geodetic Survey by Rene Cortes at Salina Cruz, Mexico; David Ortega at Manzanillo, Mexico; R. Pereira at Pt. Armuelles, Panama; V. E. Castillo at Tumaco, Colombia; G. Tapia at San Cristobal, Galapagos; S. Valenzuela at La Libertad, Ecuador; L. Meza at Talara, Peru; Juan Andia at San Juna, Peru
Inter-American Tropical Tuna Commission, La Jolla and Terminal Island, California and Guayaquil, Ecuador
Kelco Company, San Diego, California
Life guard Headquarters, Newport Beach, California
Oregon State University
Pacific Oceanographic Group, Nanaimo, British Columbia, by H. J. Hollister from observations by R. W. Collins at Quatsino Lightstation; J. L. Fraser at Cape St. James Light; B. Stuart at Amphitrite Point Light; R. A. Smith at Langara Island Light
Scripps Institution of Oceanography, La Jolla, California by Margaret Robinson and Hans Klein
Ships Jo Linda, Royal Pacific and West Point

Charts

Figure 1.--Mean sea surface temperatures (°F) derived from approximately 8000 observations. Squares show temperatures at weather-ship stations. Numerals on shore are temperatures at coastal and light-ship stations.

Figure 2.--Deviation of sea surface temperatures (°F) from long term charts of H.O. 225. Hatched areas are colder than mean.

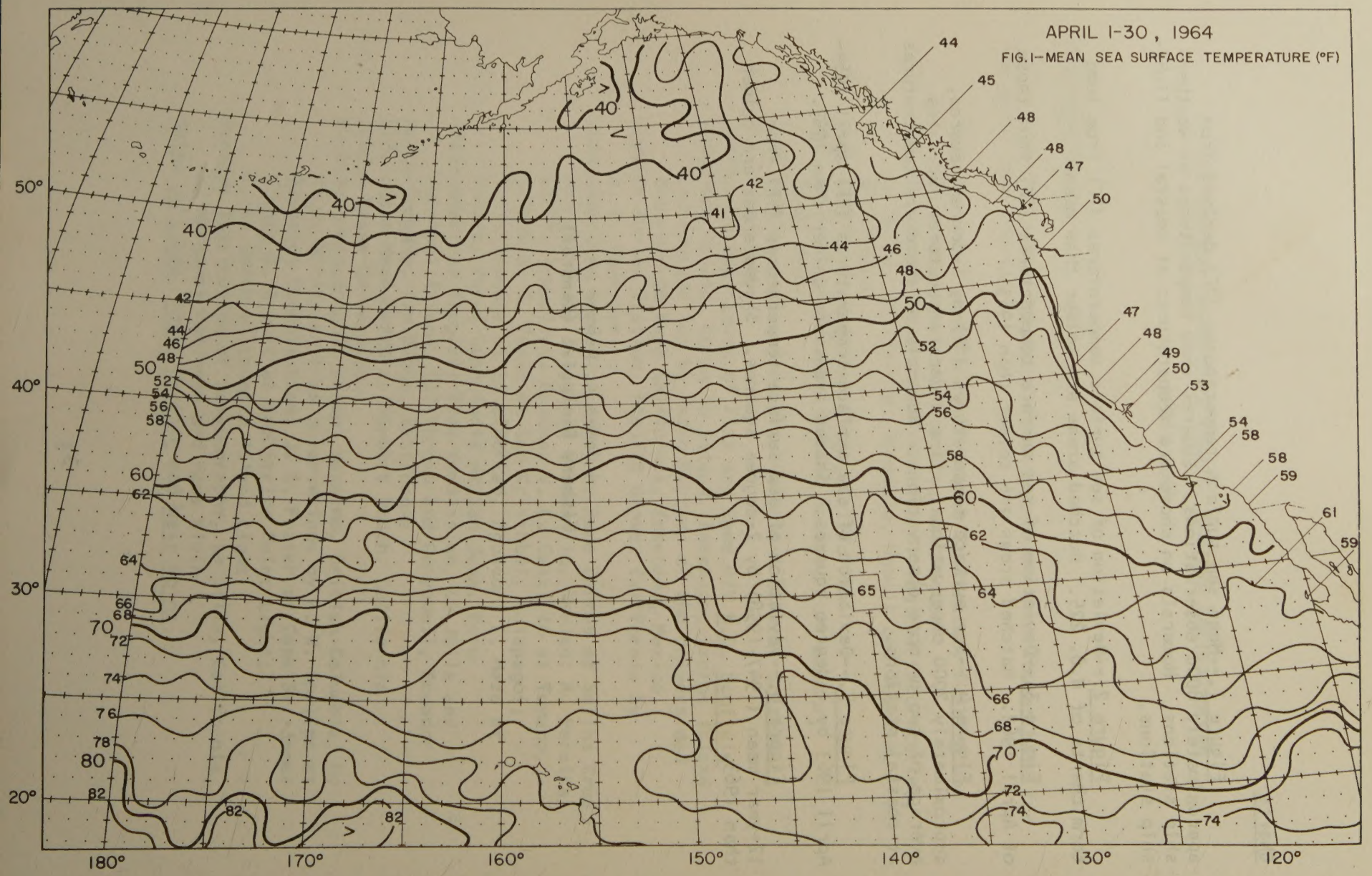
Figure 3.--Deviation of sea surface temperatures (°F) from those of April 1963. Hatched areas are colder than 1963.

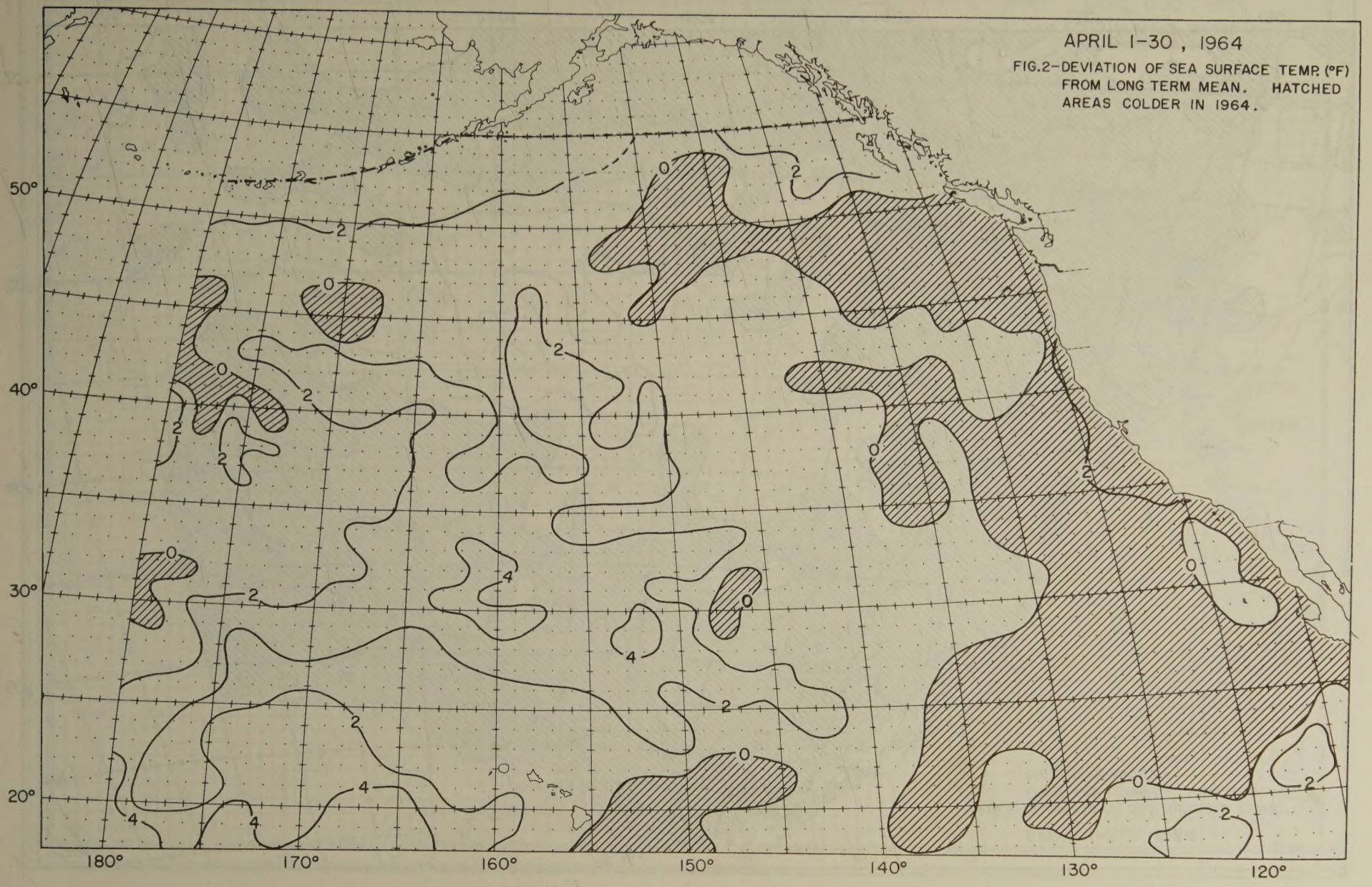
Figure 4.--Sea surface temperatures (°F) by 1-degree squares, approximately 2000 observations. Line under temperatures indicates average of two or more observations. Numerals on shore are temperatures at coastal stations.

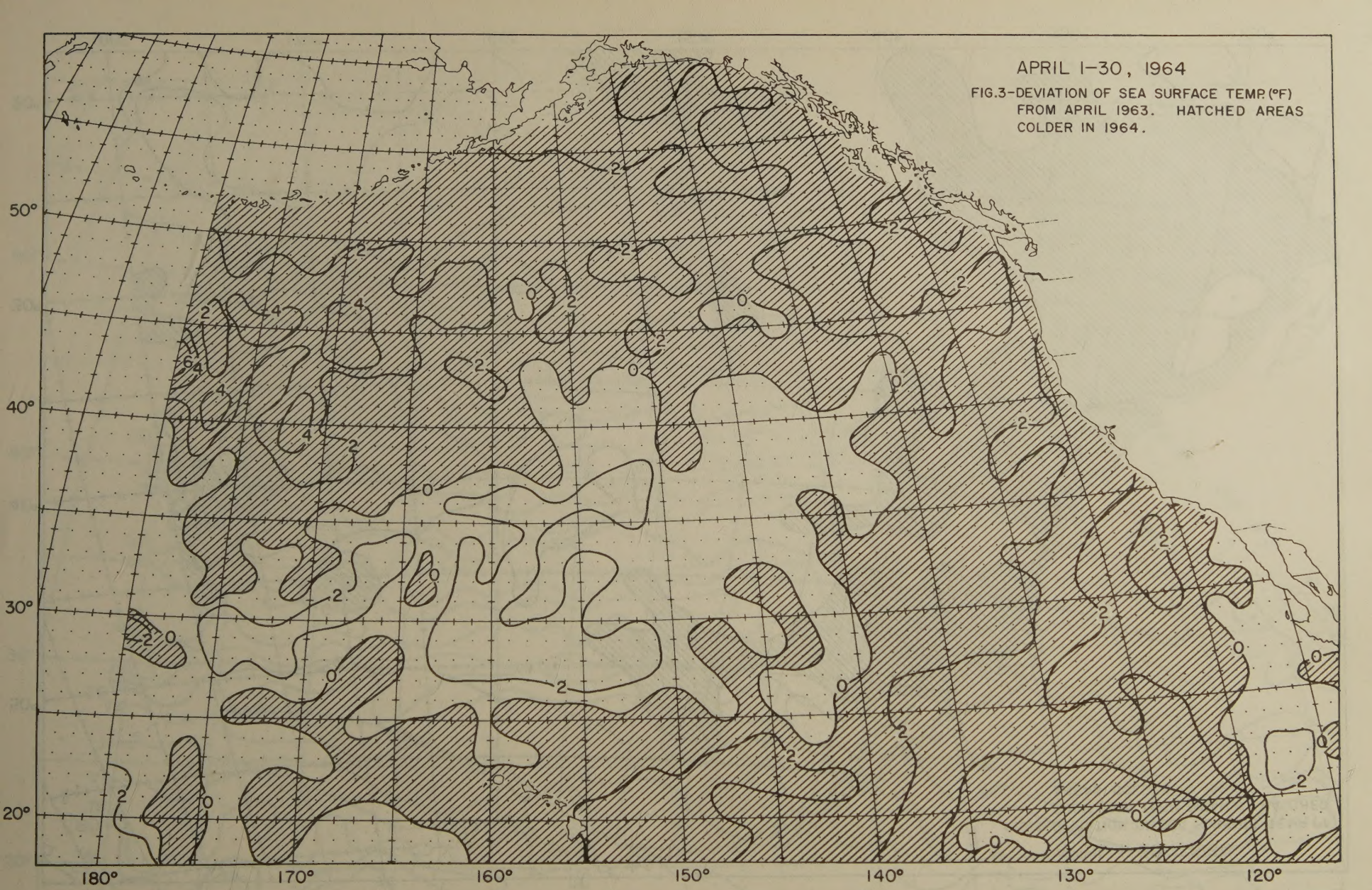
Figure 5.--Deviation of sea surface temperatures (°F) April 1964-April 1963 by 1-degree squares. Shaded areas are colder than 1963.

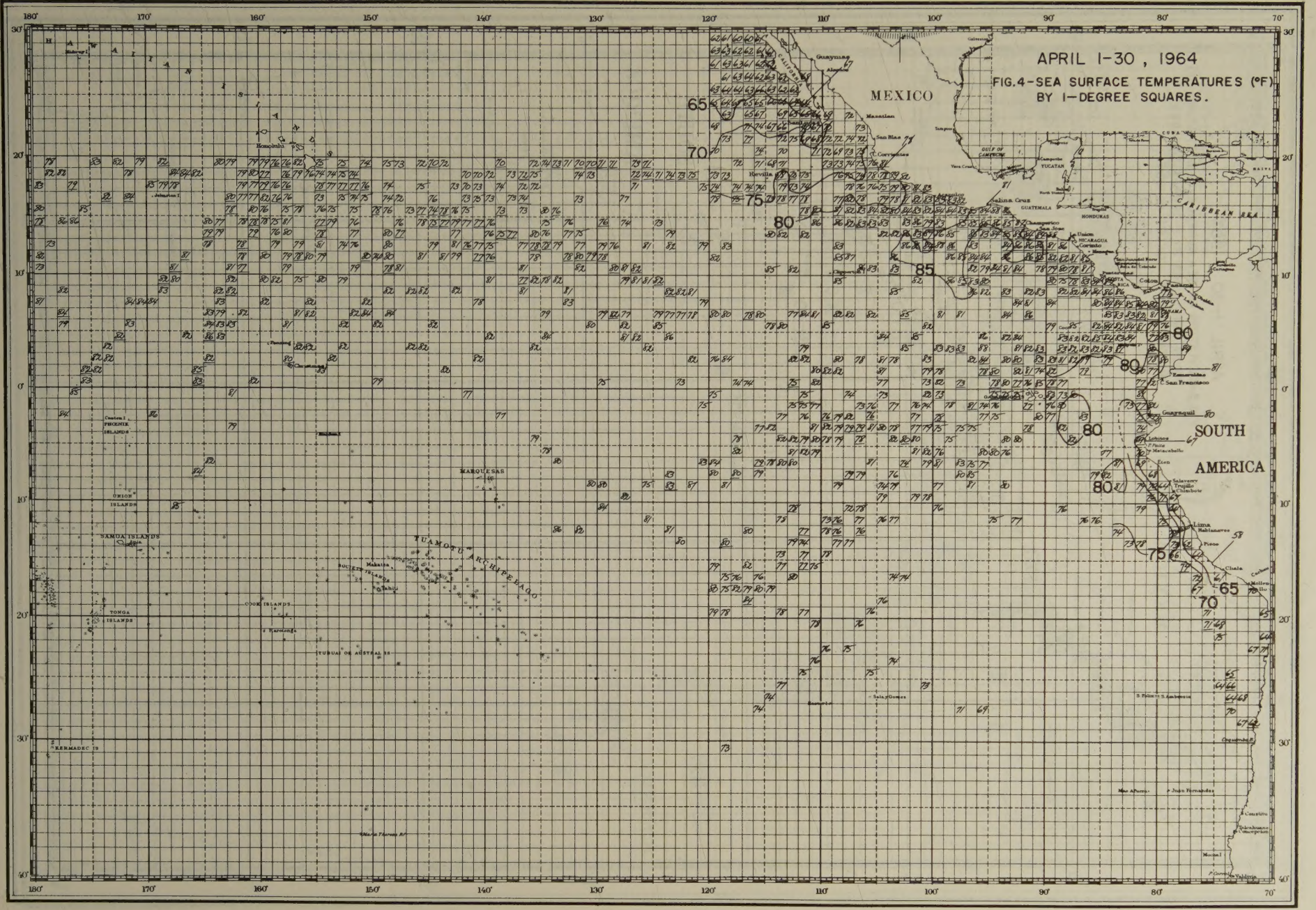
Figure 6.--Deviation of sea surface temperatures (°F) from 12-year mean (1947-1958) by 2-degree squares. Shaded areas are colder than 1963.

James A. Renner
Fishery Biologist (General)


APRIL 1-30, 1964
FIG. 1—MEAN SEA SURFACE TEMPERATURE (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


APRIL 1-30 , 1964
FIG.2-DEVIATION OF SEA SURFACE TEMP. (°F) FROM LONG TERM MEAN. HATCHED AREAS COLDER IN 1964.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


APRIL 1–30, 1964
FIG.3-DEVIATION OF SEA SURFACE TEMP.(°F) FROM APRIL 1963. HATCHED AREAS COLDER IN 1964.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


APRIL 1-30, 1964
FIG. 4 - SEA SURFACE TEMPERATURES (°F) BY 1-DEGREE SQUARES.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
HAWAIIAN ISLANDS
Honolulu
TUAMOTU ARCHIPELAGO
MARQUESAS
SAMOA ISLANDS
TONGA ISLANDS
COOK ISLANDS
Tahiti
Lima
Callao
Guayaquil
Salaverry
Trujillo
Chimbote
Pisco
Chala
Mollendo
Arica
Iquique
Antofagasta
Valparaiso
Easter I.
Juan Fernandez
Mas A Fuera
Mocha I.
Galapagos
Cocos I.
Malpelo I.
Gorgona I.
Buenaventura
Tumaco
Esmeraldas
San Francisco
Manta
Puerto Pizarro
Talara
Paita
Lobitos
Eten
Pimentel
Chicama
Salina Cruz
Guatemala
Honduras
Nicaragua
Costa Rica
Panama
Colon
Puntarenas
Cristobal
Balboa
Acapulco
Manzanillo
Mazatlan
San Blas
Guaymas
Cabo San Lucas
Ensenada
Cedros I.
Guadalupe I.
Revilla Gigedo
Clipperton I.
Cocos I.
Malpelo I.
Gorgona I.
Galapagos
Easter I.
Juan Fernandez
Mas A Fuera
Mocha I.
Valparaiso
Antofagasta
Iquique
Arica
Mollendo
Chala
Pisco
Lima
Callao
Salaverry
Trujillo
Chimbote
Paita
Talara
Puerto Pizarro
Tumaco
Buenaventura
Esmeraldas
San Francisco
Manta
Guayaquil
Lobitos
Eten
Pimentel
Chicama
Salina Cruz
Guatemala
Honduras
Nicaragua
Costa Rica
Panama
Colon
Puntarenas
Cristobal
Balboa
Acapulco
Manzanillo
Mazatlan
San Blas
Guaymas
Cabo San Lucas
Ensenada
Cedros I.
Guadalupe I.
Revilla Gigedo
Clipperton I.
Cocos I.
Malpelo I.
Gorgona I.
Galapagos
Easter I.
Juan Fernandez
Mas A Fuera
Mocha I.
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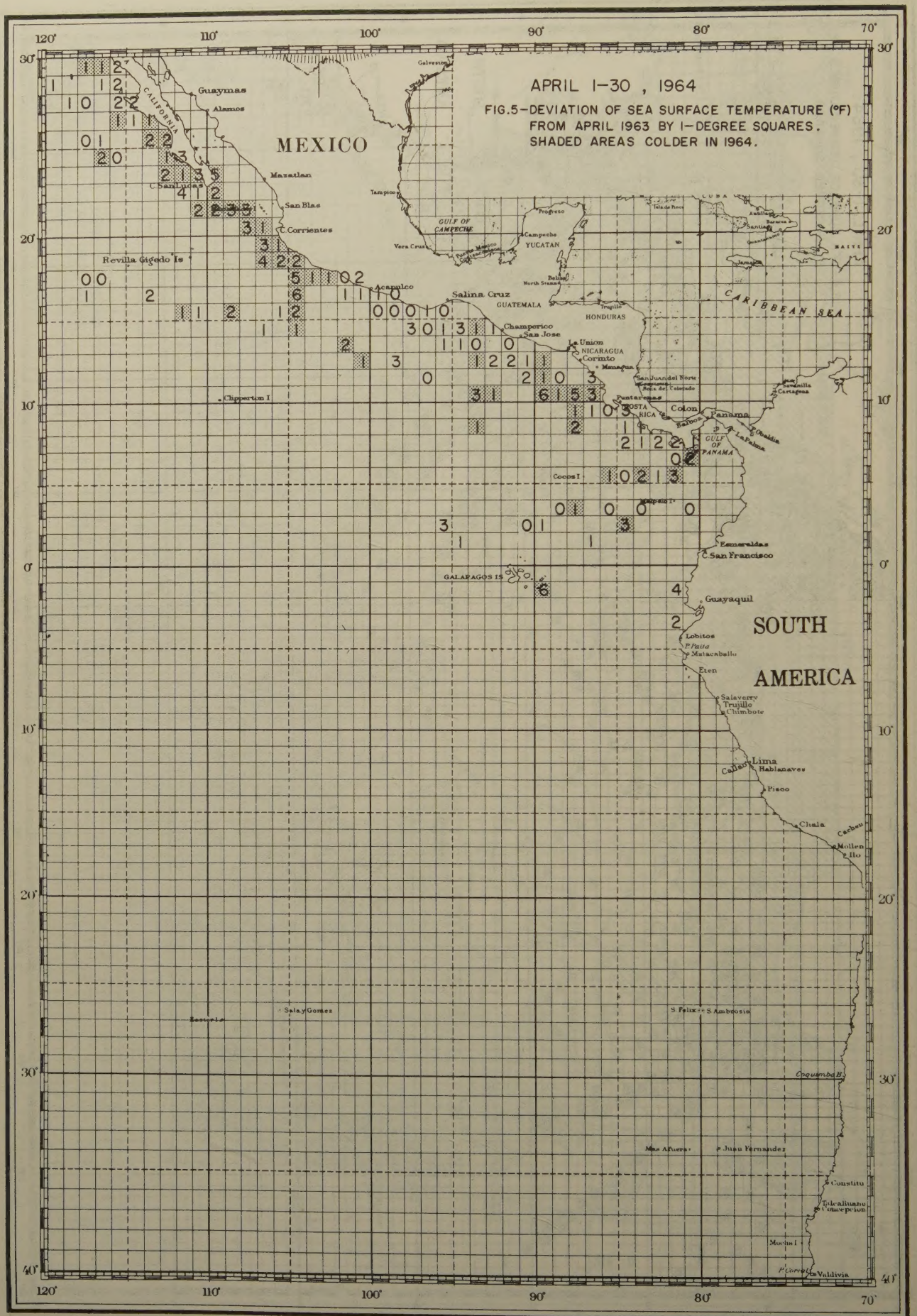
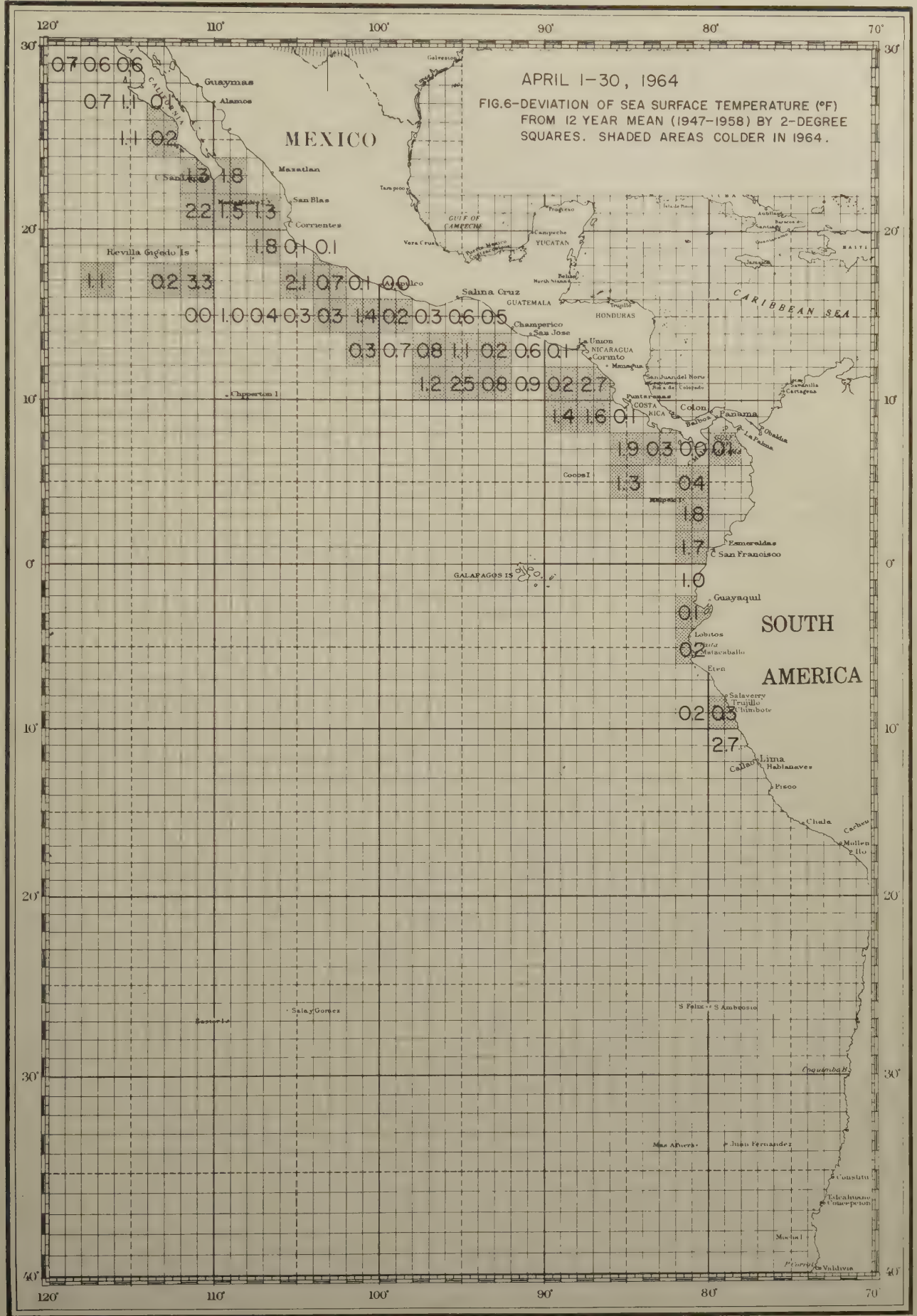
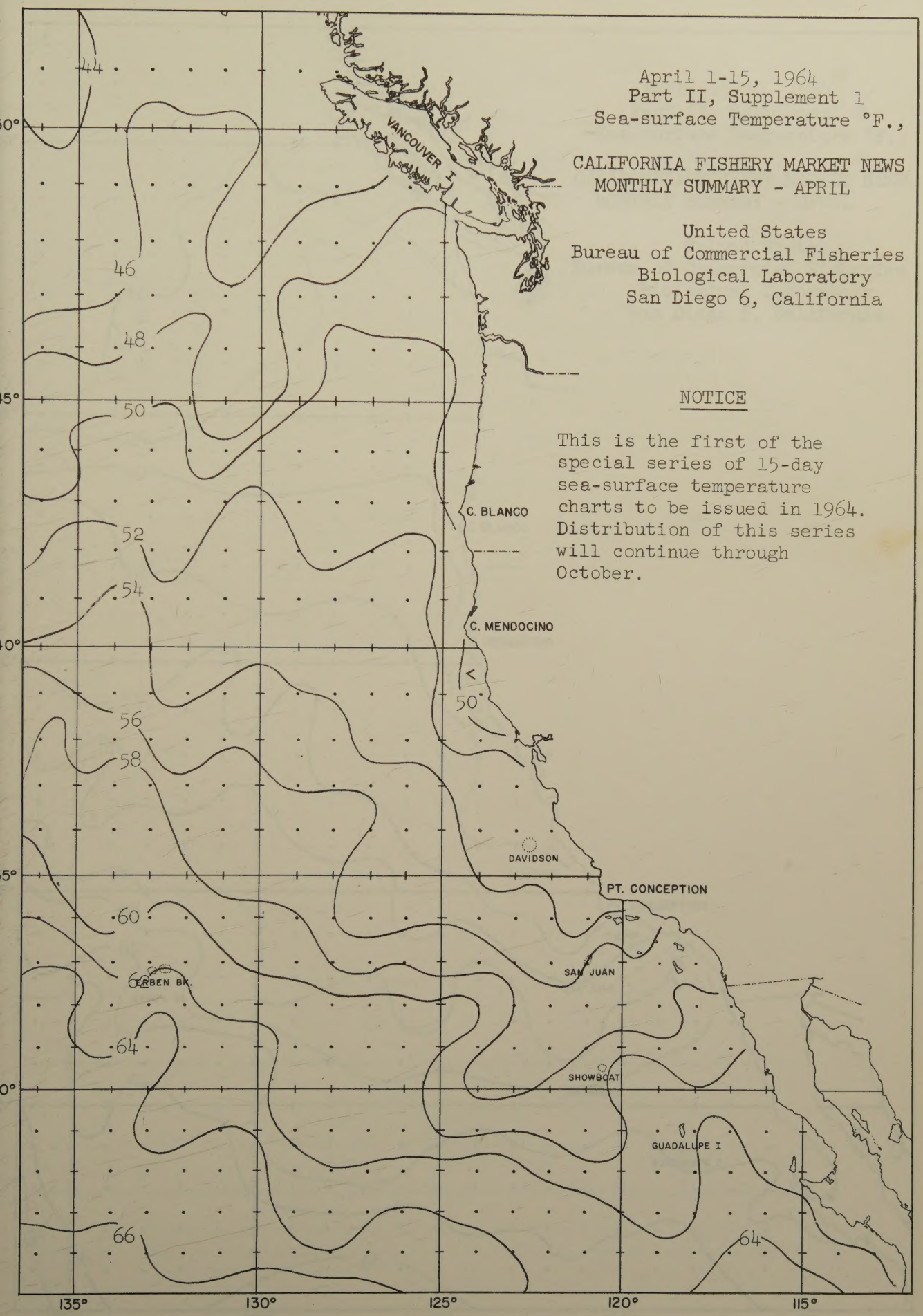
Antofagasta
Iquique
Arica
Mollendo
Chala
Pisco
Lima
Callao
Salaverry
Trujillo
Chimbote
Paita
Talara
Puerto Pizarro
Tumaco
Buenaventura
Esmeraldas
San Francisco
Manta
Guayaquil
Lobitos
Eten
Pimentel
Chicama
Salina Cruz
Guatemala
Honduras
Nicaragua
Costa Rica
Panama
Colon
Puntarenas
Cristobal
Balboa
Acapulco
Manzanillo
Mazatlan
San Blas
Guaymas
Cabo San Lucas
Ensenada
Cedros I.
Guadalupe I.
Revilla Gigedo
Clipperton I.


APRIL 1-30 , 1964
FIG.5-DEVIATION OF SEA SURFACE TEMPERATURE (°F)
FROM APRIL 1963 BY 1-DEGREE SQUARES.
SHADED AREAS COLDER IN 1964.
MEXICO
SOUTH
AMERICA
CARIBBEAN SEA
GULF OF CAMPECHE
GULF OF PANAMA
CALIFORNIA
Guaymas
Alamos
Mazatlan
C. San Lucas
San Blas
C. Corrientes
Revilla Gigedo Is
Acapulco
Salina Cruz
GUATEMALA
HONDURAS
Champerico
San Jose
La Union
NICARAGUA
Corinto
Managua
San Juan del Norte
Costa Rica
Punta Arenas
Colon
Panama
Chipperton I
Cocos I
GALAPAGOS IS
Esmeraldas
C. San Francisco
Guayaquil
Lobitos
Paita
Matacaballo
Eten
Salaverry
Trujillo
Chimbote
Callao
Lima
Hablanaves
Pisco
Chala
Mollendo
Ilo
Sala y Gomez
S. Felix
S. Ambrosio
Coquimbo
Mas Afuera
Juan Fernandez
Constitu
Talcahuano
Concepcion
Mocha I
Corral
Valdivia
Progreso
Campeche
YUCATAN
Belize
Tampico
Vera Cruz
Galveston
CUBA
HAITI
Tela de Nuevo
Barracoa
Santiago
Guantanamo
Jamaica
Trujillo
Sabanilla
Cartagena
Obaldia
La Palma
Balboa
Esperanza I.
Malpelo I.
Easter I.


APRIL 1–30, 1964
FIG.6–DEVIATION OF SEA SURFACE TEMPERATURE (°F) FROM 12 YEAR MEAN (1947–1958) BY 2-DEGREE SQUARES. SHADED AREAS COLDER IN 1964.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
YUCATAN
GULF OF AMERICA
GALAPAGOS IS
Guaymas
Alamos
Mazatlan
San Blas
Corrientes
Salina Cruz
Champerico
San Jose
La Union
Cormto
Managua
Colon
Panama
Esmeraldas
C San Francisco
Guayaquil
Lobitos
Eten
Salaverry
Trujillo
Chimbote
Lima
Callao
Pisco
Chala
Mollendo
Arica
Iquique
Valparaiso
Valdivia
Juan Fernandez
S Felix
S Ambrosio
Sala y Gomez
Easter I
Chipperton I
Coiba I
Coco I
Malpelo I
Revilla Gigedo Is
Tampico
Vera Cruz
Campeche
Progreso
Belize
Galveston
Jamaica
HAITI
Aruba
Curacao
Barranquilla
Cartagena
Chiriqui
Bocas del Toro
Rio Hacha
Maracaibo
Puerto Cabello
La Guaira
Barbados
Trinidad
Tobago
Grenada
Martinique
Guadeloupe
Antigua
Puerto Rico
Isla de Pinos
Bahamas
Cuba
Jamaica
Haiti
Dominican Republic
Puerto Rico
Virgin Islands
Leeward Islands
Windward Islands
Netherlands Antilles
Venezuela
Colombia
Panama
Costa Rica
Nicaragua
Honduras
Guatemala
Mexico
Ecuador
Peru
Chile
Pacific Ocean
Caribbean Sea
Gulf of Mexico
Gulf of America
Gulf of Panama
Gulf of Guayaquil
Gulf of Tehuantepec
Gulf of California
Gulf of Fonseca
Gulf of Nicoya
Gulf of Dulce
Gulf of Chiriqui
Gulf of Darien
Gulf of Uraba
Gulf of Morrosquillo
Gulf of Venezuela
Gulf of Paria
Gulf of Maracaibo
Gulf of Triste
Gulf of Cariaco
Gulf of Pozuzo
Gulf of Ancon
Gulf of Callao
Gulf of Pisco
Gulf of Ica
Gulf of Nazca
Gulf of Arica
Gulf of Iquique
Gulf of Antofagasta
Gulf of Coquimbo
Gulf of Valparaiso
Gulf of Concepcion
Gulf of Arauco
Gulf of Reloncavi
Gulf of Corcovado
Gulf of Penas
Gulf of Trinidad
Gulf of Otway
Gulf of Skyring
Gulf of Almirantazgo
Gulf of Ultima Esperanza
Gulf of Peninsula Brunswick
Gulf of Fagnano
Gulf of Beagle
Gulf of Nassau
Gulf of Hope
Gulf of Good Success
Gulf of Horn
Gulf of Le Maire
Gulf of Staten
Gulf of Falkland
Gulf of Falkland Islands
Gulf of South Georgia
Gulf of South Sandwich Islands
Gulf of South Orkney Islands
Gulf of South Shetland Islands
Gulf of Graham Land
Gulf of Palmer Land
Gulf of Ellsworth Land
Gulf of Marie Byrd Land
Gulf of Ross Sea
Gulf of Victoria Land
Gulf of Wilkes Land
Gulf of Adelie Land
Gulf of George V Land
Gulf of Mac Robertson Land
Gulf of Princess Elizabeth Land
Gulf of Enderby Land
Gulf of Kemp Land
Gulf of Queen Maud Land
Gulf of Coats Land
Gulf of Caird Coast
Gulf of Weddell Sea
Gulf of Filchner Ice Shelf
Gulf of Ronne Ice Shelf
Gulf of Antarctic Peninsula
Gulf of Bellingshausen Sea
Gulf of Amundsen Sea
Gulf of Pine Island Glacier
Gulf of Thwaites Glacier
Gulf of Getz Ice Shelf
Gulf of Siple Coast
Gulf of Ross Ice Shelf
Gulf of Victoria Land Coast
Gulf of Transantarctic Mountains
Gulf of Beardmore Glacier
Gulf of Shackleton Ice Shelf
Gulf of Queen Alexandra Range
Gulf of Pensacola Mountains
Gulf of Ellsworth Mountains
Gulf of Thiel Mountains
Gulf of Horlick Mountains
Gulf of Whitmore Mountains
Gulf of Shackleton Range
Gulf of Theron Mountains
Gulf of Read Mountains
Gulf of Prince Charles Mountains
Gulf of Lambert Glacier
Gulf of Amery Ice Shelf
Gulf of Prince Charles Mountains
Gulf of Mac Robertson Land
Gulf of Princess Elizabeth Land
Gulf of Enderby Land
Gulf of Kemp Land
Gulf of Queen Maud Land
Gulf of Coats Land
Gulf of Caird Coast
Gulf of Weddell Sea
Gulf of Filchner Ice Shelf
Gulf of Ronne Ice Shelf
Gulf of Antarctic Peninsula
Gulf of Bellingshausen Sea
Gulf of Amundsen Sea
Gulf of Pine Island Glacier
Gulf of Thwaites Glacier
Gulf of Getz Ice Shelf
Gulf of Siple Coast
Gulf of Ross Ice Shelf
Gulf of Victoria Land Coast
Gulf of Transantarctic Mountains
Gulf of Beardmore Glacier
Gulf of Shackleton Ice Shelf
Gulf of Queen Alexandra Range
Gulf of Pensacola Mountains
Gulf of Ellsworth Mountains
Gulf of Thiel Mountains
Gulf of Horlick Mountains
Gulf of Whitmore Mountains
Gulf of Shackleton Range
Gulf of Theron Mountains
Gulf of Read Mountains
Gulf of Prince Charles Mountains
Gulf of Lambert Glacier
Gulf of Amery Ice Shelf



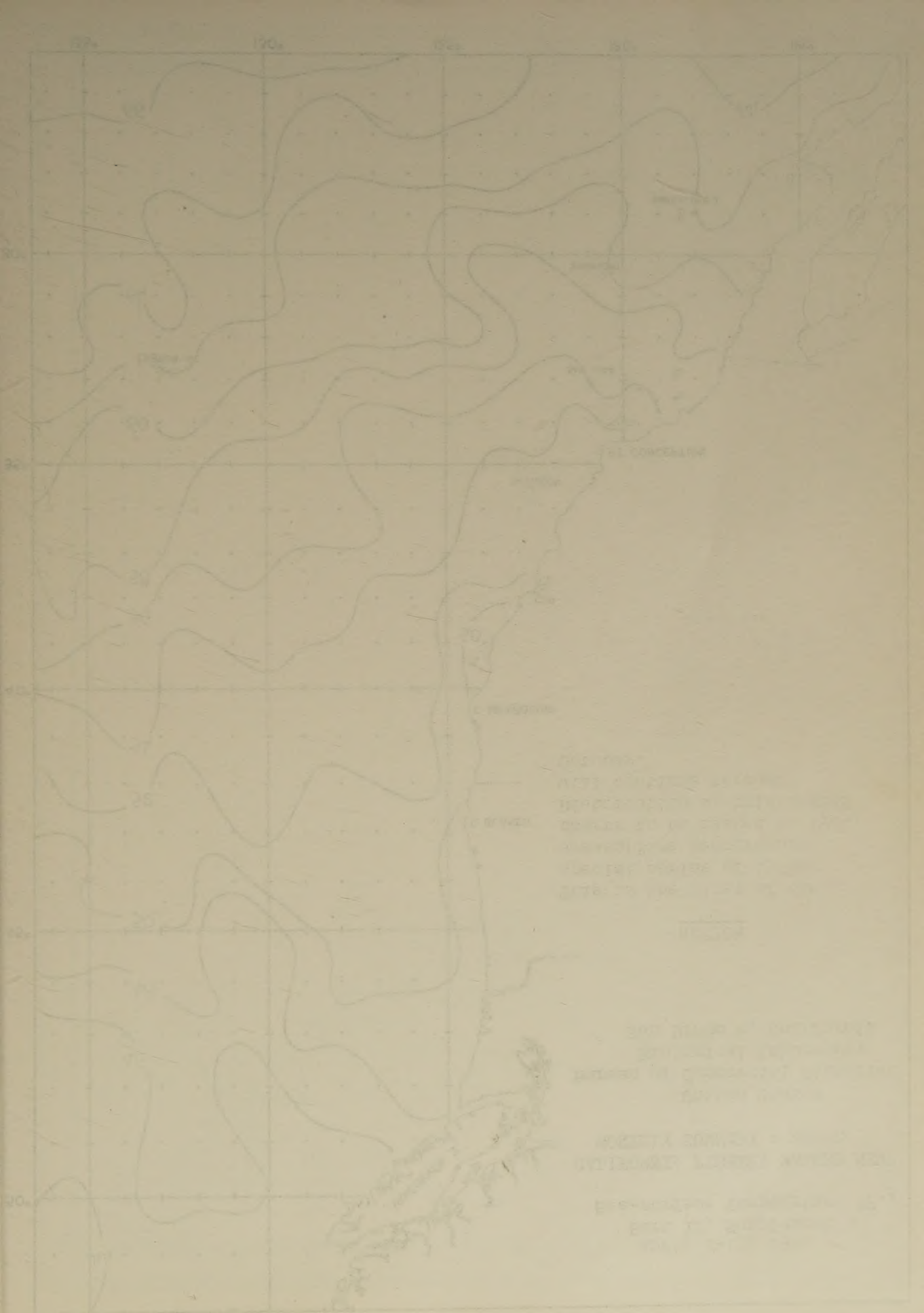
April 1-15, 1964
Part II, Supplement 1
Sea-surface Temperature °F.,

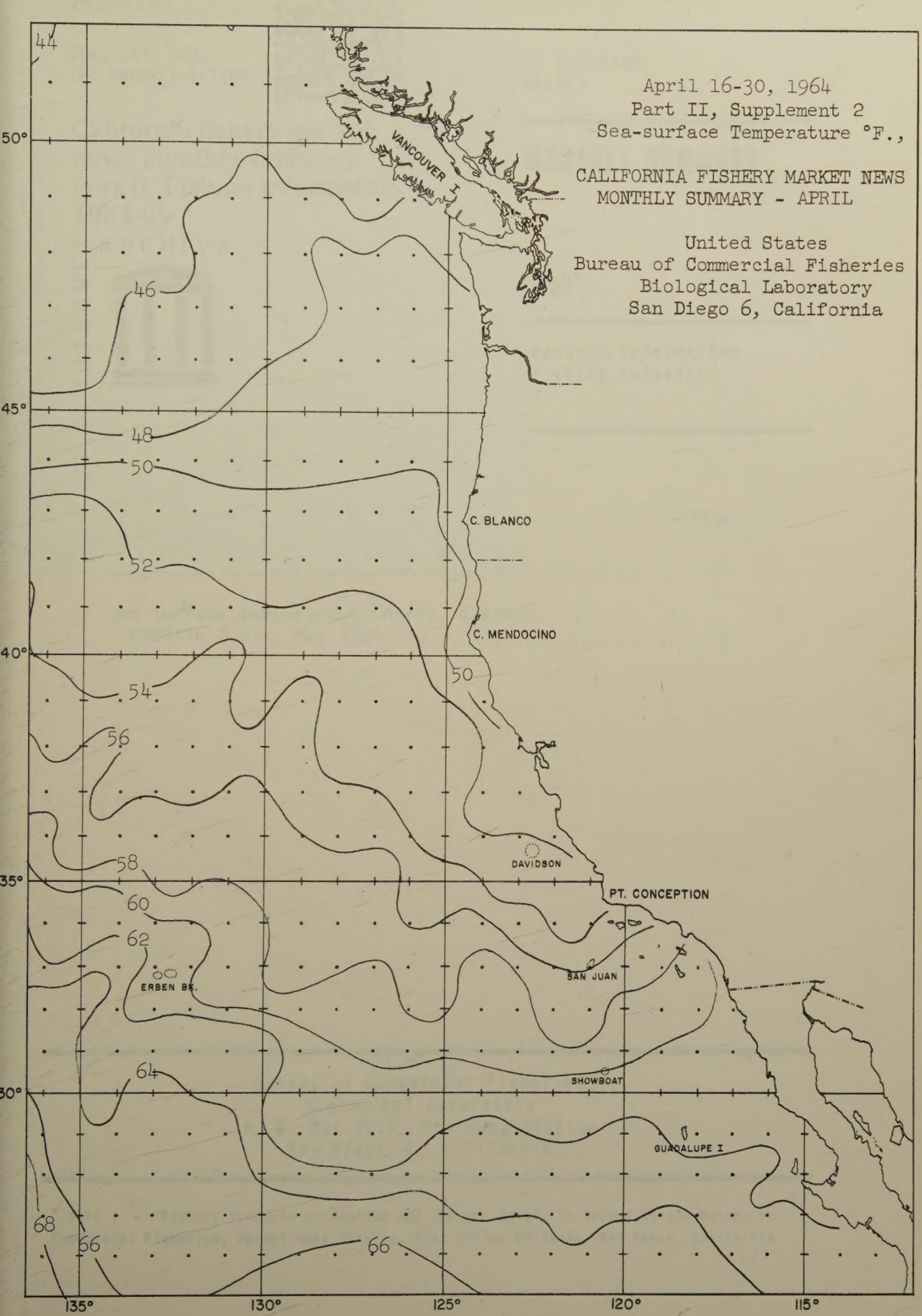
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - APRIL

United States
Bureau of Commercial Fisheries
Biological Laboratory
San Diego 6, California

NOTICE

This is the first of the special series of 15-day sea-surface temperature charts to be issued in 1964. Distribution of this series will continue through October.




April 16-30, 1964
Part II, Supplement 2
Sea-surface Temperature °F.,
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - APRIL
United States
Bureau of Commercial Fisheries
Biological Laboratory
San Diego 6, California
VANCOUVER I.
C. BLANCO
C. MENDOCINO
DAVIDSON
PT. CONCEPTION
SAN JUAN
ERBEN BK.
SHOWBOAT
GUADALUPE I
44
46
48
50
52
54
56
58
60
62
64
66
68
50°
45°
40°
35°
30°
135°
130°
125°
120°
115°